

**PATENT APPLICATION**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of

KOKURA, Kazumasa

Continuation of Serial No. 09/497,643

Confirmation No.: Not Yet Assigned

Group Art Unit: Not Yet Assigned

Filed: March 8, 2002

Examiner: Not Yet Assigned

For: A FORKLIFT HAVING A LIGHT SOURCE AND LENS COMBINATION THAT  
PROVIDES A SHAPED LIGHT BEAM (as amended)

**PRELIMINARY AMENDMENT**

Commissioner for Patents  
Washington, D.C. 20231

Sir:

Prior to examination, please amend the above-identified application as follows:

**IN THE TITLE:**

**Please delete the present title and replace it with the following new title:**

A FORKLIFT HAVING A LIGHT SOURCE AND LENS COMBINATION THAT  
PROVIDES A SHAPED LIGHT BEAM

**IN THE SPECIFICATION:**

**Page 1, before the first line, insert the following new paragraph:**

This is a Continuation of Application No. 09/497,643 (filed February 3, 2000, and  
allowed January 10, 2002), the disclosure of which is incorporated herein by reference.

20080505-030802

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Continuation Application of Serial No. 09/497,643 (Q67788)

**Page 3, please delete the first full paragraph, and replace it with the following new paragraph:**

When a light beam is emitted toward a pallet from a laser light source which is attached to a lift bracket or a fork so as to illuminate tines of the fork, the light beam which is expanded by the lens into a fan-like shape in a plan view impinges on the pallet. As a result, as shown in Fig. 3, a linear light spot 20 is formed which extends over right and left ends and a center beam portion that cooperate to form fork insertion openings 17a between a deckboard and an edgeboard.

**Please delete the paragraph bridging pages 4 and 5, and replace it with the following new paragraph:**

According to this configuration, as shown in Fig. 3, the laser light emitted from the detecting device 1 forms a light spot having a predetermined length in the direction of a horizontal plane or a direction parallel to a pallet. When the light spot impinges on a pallet, the light spot has a shape which laterally elongates, as indicated by 20, so that a wide range including the insertion openings 17a of the pallet 17 is irradiated. When the light spot impinges on a load 19 placed on the pallet 17, the load 19 can be surely irradiated regardless of the placement position of the load 19, as indicated by 22a.

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**Page 5, please delete the first full paragraph, and replace it with the following new paragraph:**

As described above, the optical pallet detecting device 1 is attached to the position where the device can perform illumination along the same plane as the tines of the fork and on a straight line. When the forklift 11 is advanced after the light spot is formed as indicated by 20 in Fig. 3, therefore, the fork 15 can be surely inserted into the insertion openings 17a of the pallet 17.

**Please delete the paragraph bridging pages 7 and 8, and replace it with the following new paragraph:**

According to the invention, as described above, the light beam emitted from the laser light source is formed into a lateral shape which elongates in the width direction of a pallet. The light spot 20 is surely formed in a gap between a load and another load 9, the insertion openings of the pallet 17, and the like. Namely, the light spot 20 which laterally elongates is always formed. As a result, the invention attains an effect that the operator is prevented from losing sight of the light spot 20 and hence loading and unloading works can be smoothly conducted.

**IN THE CLAIMS:**

**Please enter the following amended claims:**

1. (Amended) A forklift comprising:  
  
a main body;  
  
a mast disposed on said main body;

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a load handling device mounted for movement on said mast in a first direction;

a light source disposed on said load handling device; and

a lens disposed adjacent to said light source,

wherein a light beam emitted from said light source passes through said lens and is formed into a shape having a cross section that is elongated in a second direction that is substantially perpendicular to said first direction,

wherein said load handling device includes (1) a lift bracket mounted on said mast, and (2) a fork engaged with said lift bracket,

wherein said light source is mounted on a center of said lift bracket.

2. (Amended) The forklift as claimed in claim 1, wherein said lens has a cylindrical shape having a center axis in parallel to said first direction and perpendicular to a light propagation direction.

**Please cancel claims 3 and 4 without prejudice or disclaimer.**

**Please add the following new claims:**

5. (New) The forklift as claimed in claim 1, wherein said first direction is a vertical direction, and said second direction is a horizontal direction.

6. (New) The forklift as claimed in claim 1, wherein said light source is a laser light source.

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7. (New)      The forklift as claimed in claim 1, wherein said light source emits said light beam in a third direction that is substantially perpendicular to said first and said second directions.

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REMARKS

Entry and consideration of this Preliminary Amendment is respectfully requested. The Preliminary Amendment implements the following claim changes: (1) amends claims 1 and 2 to bring them respectively up to speed with claims 1 and 2 that were canceled from the Parent Application (allowed January 10, 2002); (2) adds new claims 5 and 6 which respectively correspond to claims 5 and 7 that were canceled from the Parent Application, and (3) adds new claim 7 to recite an additional feature of the present invention.

In the Parent Application, the Examiner rejected claim 1 under 35 U.S.C. § 103(b) as being obvious over US 3,854,820 to Hansen ("Hansen") in view of US 5,208,753 to Acuff ("Acuff").<sup>1</sup> Applicant respectfully assert that this rejection position is incorrect for all of the reasons presented in the November 5, 2001 Request for Reconsideration, which is incorporated herein by reference. Briefly, these reasons include: (1) those skilled in the art would not have been motivated to make the alleged modification because the references take mutually exclusive paths to achieve fundamentally different solutions; (2) Hansen's explicit teachings would have led those skilled in the art away the alleged modification; and (3) if the alleged modification were implemented, the relocated reflector 54 would necessarily interfere with the lateral movements of the fork tines 11.

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<sup>1</sup> See August 8, 2001 Office Action, pp. 2-3.

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Furthermore, Applicant respectfully points out that those skilled in the art would not put Hansen's technique into practical use, because the configuration of Hansen is complicated, hard to produce, and expensive to produce.

According to Hansen, the reflector 54 is rotated by a motor. However, the rotation mechanism itself is not shown in the drawings. At least in this respect, the technique of Hansen is merely an idea (*i.e.*, the structural details have not been disclosed in a practical setting).

Consider the following. *First*, it would be difficult to rotate the reflector 54 fast enough to observe the projection surface in a line. *Second*, conventionally, it is an uncommon practice to mount a motor or reflector 54 on a fork. This is because the fork is subjected to hard shock or vibration during operation. Accordingly, the mechanism including the reflector 54 and/or motor would malfunction. To overcome this deficiency, the mechanism must be increased in size. In such a case, however, the mechanism cannot be mounted on the fork.

In view of these problems, those skilled in the art would find it difficult to implement Hansen's device, especially the Examiner's alleged modification to Hansen.

In sharp contrast to Hansen, the present invention employs just a lens to make the projection surface in a line. The configuration of the invention puts the line-like projection surface in practical use for the first time.

For these reasons, Applicant respectfully asserts that claim 1 is patentable, and that claims 2 and new claims 5-7 are patentable at least by virtue of their dependencies.

In view of the above, this application is believed to be in condition for allowance, and such action is hereby solicited. If any points remain in issue which the Examiner feels may be

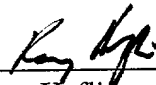
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best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

Applicant hereby petitions for any extension of time which may be required to maintain the pendency of this case, and any required fee, except for the Issue Fee, for such extension is to be charged to Deposit Account No. 19-4880.

Respectfully submitted,

  
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Ray Heflin  
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Date: March 8, 2002



**APPENDIX**

**VERSION WITH MARKINGS TO SHOW CHANGES MADE**

**IN THE TITLE:**

**The title is changed as follows:**

**A FORKLIFT HAVING A LIGHT SOURCE AND LENS COMBINATION THAT  
PROVIDES A SHAPED LIGHT BEAM**

**IN THE SPECIFICATION:**

**The specification is changed as follows:**

**Page 1, before the first line, insert the following new paragraph:**

**This is a Continuation of Application No. 09/497,643 (filed February 3, 2000, and  
allowed January 10, 2002), the disclosure of which is incorporated herein by reference.**

**Page 3, first full paragraph:**

When a light beam is emitted toward a pallet from a laser light source which is attached to a lift bracket or a fork so as to illuminate tines of the fork, the light beam which is expanded by the lens into a fan-like shape in a plan view impinges on the pallet. As a result, as shown in Fig. 3, a linear light spot [20a] 20 is formed which extends over right and left ends and a center beam portion that cooperate to form fork insertion openings 17a between a deckboard and an edgeboard.

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**Paragraph bridging pages 4 and 5:**

According to this configuration, as shown in Fig. 3, the laser light emitted from the detecting device 1 forms a light spot having a predetermined length in the direction of a horizontal plane or a direction parallel to a pallet. When the light spot impinges on a pallet, the light spot has a shape which laterally elongates, as indicated by [20a] 20, so that a wide range including the insertion openings 17a of the pallet 17 is irradiated. When the light spot impinges on a load 19 placed on the pallet 17, the load 19 can be surely irradiated regardless of the placement position of the load 19, as indicated by 22a.

**Page 5, first full paragraph:**

As described above, the optical pallet detecting device 1 is attached to the position where the device can perform illumination along the same plane as the tines of the fork and on a straight line. When the forklift 11 is advanced after the light spot is formed as indicated by [20a] 20 in Fig. 3, therefore, the fork 15 can be surely inserted into the insertion openings 17a of the pallet 17.

**Paragraph bridging pages 7 and 8:**

According to the invention, as described above, the light beam emitted from the laser light source is formed into a lateral shape which elongates in the width direction of a pallet. The light spot 20 is surely formed in a gap between a load and another load 9, the insertion openings of the pallet 17, and the like. Namely, the light spot [20a] 20 which laterally elongates is always formed. As a result, the invention attains an effect that the operator is prevented from losing

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sight of the light spot [20a] 20 and hence loading and unloading works can be smoothly conducted.

**IN THE CLAIMS:**

The claims are amended as follows:

1. (Amended) A forklift comprising:

a main body;

a mast disposed [in front of the] on said main body;

a [lift bracket] load handling device mounted for movement on [the] said mast[, the lift movable] in [vertical] a first direction;

[a fork engaged with the lift bracket;]

a [laser] light source disposed on [the lift bracket or said fork, for illuminating an area in front of said fork] said load handling device; and

a lens disposed [in front of the laser] adjacent to said light source,

wherein a light beam emitted from said [laser] light source [via the] passes through said lens and is formed into a shape [which laterally elongates] having a cross section that is elongated in a second direction that is substantially perpendicular to said first direction,

wherein said load handling device includes (1) a lift bracket mounted on said mast, and (2) a fork engaged with said lift bracket,

wherein said light source is mounted on a center of said lift bracket.

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2. (Amended) The forklift as claimed in claim 1, wherein [the] said lens has a cylindrical shape having [the] a center axis in parallel to [the horizontal] said first direction and perpendicular to [the] a light propagation direction.

**Claims 3 and 4 are canceled.**

**Claims 5-7 are added as new claims.**